

CLAIMS

I claim:

1. An aircraft with directional thrust control comprising:

an airframe,

5 an onboard primary power source producing compressed air, and

at least two thrust producing modules disposed peripherally on said airframe, each said thrust producing module connected to said power source for receiving a flow of said

compressed air, each said thrust producing module connected to a fuel source, each said thrust producing module attached to a respective thrust producing module support

10 structure, each said support structure configured with directionally variable means for varying the thrust angle of said thrust producing module with respect to the roll axis of said aircraft, all said thrust producing modules being connected to a common controller for coordinated control of said aircraft.

15 2. An aircraft according to claim 1, said directionally variable means comprising a first rotatable joint perpendicular to said roll axis of said aircraft and a second rotatable joint parallel to said roll axis of said aircraft.

3. An aircraft according to claim 1, said common controller and said thrust producing
20 modules comprising means for

controlling the amount of thrust produced by each said thrust producing module,
apportioning the total thrust among said thrust producing modules, and
controlling the angle of thrust of each said module.

25 4. An aircraft according to claim 2 each said module support structure comprising said first rotatable joint permits rotation of respective said thrust producing module in a first axis of rotation over a range of at least 180°, and said second rotatable joint permits rotation of said thrust producing module in a second axis of rotation over a range of at least 90°.

5. An aircraft according to claim 4 wherein said first axis of rotation is proximate said thrust producing module, and wherein said second axis of rotation is proximate said airframe.

5 6. An aircraft according to claim 5 wherein said system comprises at least four said thrust producing modules.

7. An aircraft according to claim 1, further comprising a source of liquid oxygen available to each said module.

10

8. An aircraft according to claim 1, said thrust producing modules having combustion chambers and exhaust outlets and further comprising exhaust pistons whereby thrust may be controlled.

15 9. An aircraft according to claim 3, each said thrust producing module further comprising and powering an electrical generator for producing at least enough electrical energy required for operation of said module.

20 10. An aircraft according to claim 3 further comprising a rearward directed, in-line source of thrust.

11. An aircraft according to claim 10, said rearward, in-line source of thrust being angularly rotatable with respect to at least said pitch axis.

25 12. An aircraft according to claim 10, said rearward, in-line source of thrust being at least one additional said thrust producing module.

13. An aircraft according to claim 3, said primary power source comprising at least one jet engine.

30

14. An aircraft according to claim 13, said jet engine further comprising a rearward directed, in-line source of thrust.

15. An aircraft according to claim 3, said aircraft comprising a center of rotation common to pitch, roll and yaw axes, and further comprising a cockpit located proximate said center of rotation.

16. An aircraft according to claim 3, said airframe further comprising a heat shield on the underside thereof.

17. An aircraft with directional thrust control comprising:

an airframe,

an onboard primary power source producing compressed air,

at least two thrust producing modules disposed peripherally on said airframe,

each said thrust producing module connected to said power source for receiving a flow of said compressed air, each said thrust producing module connected to a fuel source, each said thrust producing module attached to a respective thrust producing module support structure, each said support structure configured with a first rotatable joint perpendicular to the roll axis of said aircraft and a second rotatable joint parallel to said roll axis of said aircraft for varying the thrust angle of said thrust producing module with respect to said roll axis of said aircraft, and all said thrust producing modules being connected to a common controller for coordinated control of said aircraft, said aircraft comprising a center of rotation common to pitch, roll and yaw axes, and

a cockpit located proximate said center of rotation.

18. An aircraft according to claim 17, said at least two thrust producing modules being four thrust producing modules.

19. An aircraft according to claim 18, further comprising within each said module support structure said first rotatable joint permitting rotation of respective said thrust producing

module in a first axis of rotation over a range of at least 180°, and said second rotatable joint permitting rotation of said thrust producing module in a second axis of rotation over a range of at least 90°.

- 5 20. An aircraft with directional thrust control comprising:
- an airframe,
 - an onboard primary power source producing compressed air,
 - at least four variable angle thrust producing modules disposed on said airframe,
- each said thrust producing module connected to said power source for receiving a flow of
- 10 said compressed air, each said thrust producing module connected to a fuel source, each said thrust producing module attached to a respective thrust producing module support structure, each said support structure configured with rotatable joints for varying the thrust angle of said thrust producing module, all said thrust producing modules being connected
- to a common controller for coordinated control of said aircraft, said aircraft comprising a
- 15 center of rotation common to pitch, roll and yaw axes, and
- a cockpit located proximate said center of rotation.